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SMITH FROHWEIN TEMPEL GREENLEE BLAHA, LLC			EXAMINER	
Two Ravinia Drive			AJIBADE AKONAI, OLUMIDE	
Suite 700				
ATLANTA, GA 30346			ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/523,149	Applicant(s) KAPLAN ET AL.	
	Examiner OLUMIDE T. AJIBADE AKONAI	Art Unit 2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 June 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 41-54 and 56-67 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 63 is/are allowed.
- 6) ☒ Claim(s) 41, 47-54, 60-62, 64 and 66 is/are rejected.
- 7) ☒ Claim(s) 42-46, 56-59, 65 and 67 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 41, 48, 49-54, 64, and 66 are rejected under 35 U.S.C. 102(e) as being anticipated by **Denker et al 7,002,489 (hereinafter Denker)**.

Regarding **claims 41 and 53**, Denker discloses a method for correlating a vehicle with the road on which it travels based on cellular communication, the method comprising the steps of: gathering a sequence of cellular network events (handoffs, see col. 2, lines 55-63, col. 3, lines 55-59) related to one or more mobile and a physical, geographically-defined, accurate location of each mobile unit (mobile station, see col. 2, lines 48-50) determined by a physical geographically-defined, accurate location determination system when each cellular network event occurs (determining a sequence of handoffs as a mobile station moves across cells along a route/path, see col. 2, lines 55-63, col. 3, lines 47-63, col. 4, lines 1-8), such cellular network events and physical, geographically-defined accurate locations being gathered during one or more drives and then stored as entries in a learnt database as a location reference (server 622 comprising database 628, to store the sequence of handoffs sent from the mobile

Art Unit: 2617

station, see fig. 6, col. 4, lines 2-8, col. 5, lines 4-7, col. 8, lines 4-14 and 61-67, and col. 9, lines 1-5); and conducting analysis of a new sequence of cellular network events related to a particular mobile unit, the new sequence of cellular network activity events being gathered during a new drive and is independent of physical, geographically-defined location information, in conjunction with the learnt database to correlate the new sequence of cellular network events to a physical geographic location (using the stored handoff information of a mobile station along a path/route to determine location of any mobile station that is moving along the same path/route comparing the current the current time and handoff information of the mobile station with the stored timing and handoff information, see col. 4, lines 49-67, col. 5, lines 1-10, and col. 8, lines 4-14); whereas the new sequence of cellular network events is extrinsically collected from the base stations or the controllers or main switching systems or communication links between them (transmitting information on cellular handoffs along the route requires transmitting from mobile station along the base station, BSC, and MSC to the server 622, see fig. 6, col. 3, lines 64-67, col. 4, lines 1-8) and whereas the data is processed to overcome the problem of similar sequences for neighboring routes (see col. 3, lines 55-67, col. 4, lines 14-17, col. 8, lines 4-14).

Regarding **claim 48**, as applied to claim 1, Denker further discloses wherein the step of conducting analysis further comprises: matching chains from new drives to the learnt database by searching for a chain of J cells that has at least K ($K \leq J$) cells that appear in the same order, both in a chain from the new drive as well as in a chain from the learnt database, whereas J and K may vary for different route sections (using the

Art Unit: 2617

stored handoff information of a mobile station along a path/route to determine location of any mobile station that is moving along the same path/route comparing the current the current time and handoff information of the mobile station with the stored timing and handoff information, see col. 4, lines 49-67, col. 5, lines 1-10, and col. 8, lines 4-14); assigning the route of the chain from the learnt database to the new chain that was matched (see col. 4, lines 49-67, col. 5, lines 1-10, and col. 8, lines 4-14).

Regarding **claim 49**, as applied to claim 48, Denker further discloses wherein the step of conducting analysis includes a secondary matching procedure comprising the step of matching cells before and after the match previously detected by following raw data chains in the learnt database backward and forward relative to the matched chain and looking for an L out of M ($L \leq M$) cells match where as M is typically smaller than J, where as L and M may vary for different route sections (using the stored handoff information of a mobile station along a path/route to determine location of any mobile station that is moving along the same path/route comparing the current the current time and handoff information of the mobile station with the stored timing and handoff information, see col. 4, lines 49-67, col. 5, lines 1-10, and col. 8, lines 4-14).

Regarding **claim 50**, Denker further discloses wherein the step of conducting analysis-detects the vehicle location at specific points along the route by: extracting handovers information comprised of cell pairs, physical geographically-defined location, timing, and accuracy, information from handover chains in the learnt database that match a new chain of handovers, and calculating location and accuracy of handovers in the new chain of handovers according to the handover information extracted from the

learnt database that relate to the same route section and contain the same cell pairs (see col. 4, lines 49-67, col. 5, lines 1-10, and col. 8, lines 4-14).

Regarding **claim 51** as applied to claim 41, Denker further discloses The method as in claim 41, wherein the step of conducting analysis to correlate the new sequence of events to a specific route, further comprises conducting analysis to detect traffic incidents by: if another mobile unit is in a call and no new handovers have been received for a time T, a distance D to a farthest possible handover location to a possible next cell is used to calculate a maximal possible speed at a current route section as follows: $\text{Max Speed} \leq D/T$ and if this speed is below a speed threshold S then a possible incident report is issued for this route section (see fig. 6, col. 4, lines 2-8, col. 5, lines 4-7, col. 7, lines 7-16).

Regarding **claim 52**, as applied to claim 41, Denker further discloses wherein the step of conducting analysis is based only on cell ID data (see col. 4, lines 49-67, col. 5, lines 1-10, and col. 7, lines 4-14 and 45-54).

Regarding **claim 54** as applied to claim 41, Denker further discloses wherein the step of conducting analysis is based on extraction of new events from a different percentage of calls in different parts of the cellular system (see fig. 6, col. 3, lines 64-67, col. 4, lines 1-8).

Regarding **claim 64**, as applied to claim 41, Denker further discloses wherein step of conducting analysis is performed for areas where at least two roads are covered, at least partially, by the same two or more cells (see fig. 4, col. 4, lines 49-67, col. 5, lines 1-10, and col. 8, lines 4-14 and 45-54).

Regarding **claim 66**, as applied to claim 41, Denker further discloses wherein the step of conducting analysis further comprises continuously updating the learnt database, estimating the location of handovers within matched sequences that do not appear in the database; and adding new matched sequences to the learnt database (determining a sequence of handoffs as a mobile station moves across cells along a route/path, see col. 2, lines 55-63, col. 3, lines 47-63, col. 4, lines 1-8).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

Art Unit: 2617

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Denker et al 7,002,489 (hereinafter Denker)** in view of **Rudrapatna et al 6,052,598 (hereinafter Rudrapatna)**.

Regarding **claim 47**, as applied to claim 41, Denker further discloses wherein the step of gathering a sequence of events includes calculating an accuracy level of a handover in one or a combination of the following way: measuring the location spread of handovers between the same cells for different trips over the same route to determine handover accuracy level and average location (training the system to a sequence of handovers between the start and end of a route, storing the result of the training sequence, and using the stored result of the training sequence to determine location of a mobile station moving along the same route by comparing handover sequence and timing as the mobile station moves along the route with the handoff sequence and timing of the training sequence, see col. 4, lines 49-67, col. 5, lines 1-10, and col. 8, lines 4-14). Denker does not specifically disclose using signal strength measurements to detect sharp decays in signal strength resulting in a handover and thus determine handovers accuracy level; measuring the location spread of handovers between the same cells for different trips over the same route to determine handover accuracy level and average location.

In the same field of endeavor, Rudrapatna discloses using signal strength measurements to detect sharp decays in signal strength resulting in a handover and thus determine handovers accuracy level (see figs. 1-3, col. 3, lines 21-51).

It would therefore have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Rudrapatna into the system of Denker for the purpose of determining the location of a mobile phone in a cell.

5. Claims 60-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Denker et al 7,002,489 (hereinafter Denker)** in view of **Toshimitsu et al 20060072501 (hereinafter Toshimitsu)**.

Regarding **claim 60**, as applied to claim 41, Denker discloses the claimed limitation except wherein the step of conducting analysis detects traffic incidents by; collecting handover time density information for each route section; alerting of probable incidents whenever handover time density of a new chain decreases rapidly.

Toshimitsu however discloses of conducting analysis detects traffic incidents by; collecting handover time density information for each route section; alerting of probable incidents whenever handover time density of a new chain decreases rapidly (using handover frequency to determine presence of traffic jam on a road, se p.11, [0127]-[0128]).

It would therefore have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Denker, by determining the frequency of handoff on a road as taught by Toshimitsu for the benefit of detecting the speed of a vehicle or traffic condition of the road.

Regarding **claim 61**, as applied to claim 41 Denker discloses the claimed limitation. Toshimitsu further discloses wherein the step of conducting analysis detects incident clearance by: collecting handover time density information for each route section; and notifying of incident clearance whenever, after an incident, the density of news increases significantly (using handover frequency to determine presence of traffic jam on a road, se p.11, [0127]-[0128]).

Regarding **claim 62**, as applied to claim 41, Denker discloses the claimed limitation. Toshimitsu further discloses wherein the step of conducting analysis detects traffic speed by: including a calibration stage in which traffic speed of a route section is correlated with the rate of handovers for this route section at the same time; the handovers rate is measured continuously and by comparing to the handover rate in the calibration stage the speed for the route section is extracted (using handover frequency to determine presence of traffic jam on a road, se p.11, [0127]-[0128]).

Allowable Subject Matter

6. Claims 42-46, 56-59, 65 and 67 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

7. Applicant's arguments with respect to claims 41 and 53 have been considered but are moot in view of the new ground(s) of rejection.

Claim 63 is allowed.

Conclusion

Art Unit: 2617

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to OLUMIDE T. AJIBADE AKONAI whose telephone number is (571)272-6496. The examiner can normally be reached on M-F, 8.30p-5p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Appiah can be reached on 571-272-7904. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2617

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

OA

/Charles N. Appiah/
Supervisory Patent Examiner, Art Unit 2617